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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,181

09/29/2005

Snjezana Boger

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22428 7590 03/05/2009  
FOLEY AND LARDNER LLP  
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EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

03/05/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/551,181	BOGER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tho v. Duong	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/29/05</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

The disclosure is objected to because of the following : on page 1, line 6, and page 2, line 11, the reference number of claim 1 is cited in the specification. However, the claim number is subjected to change during the prosecution.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2 and 6-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Harada Hiroaki (JP 2000329495A). Harada discloses (paragraphs 21-23, 30 and 38-39) a heat exchanger having a hydrophilic surface coating contains nanoparticles of metal oxides of group II or group III, wherein the nanoparticles are contained in a sol, which is used as coating material in a sol-gel coating and the sol contains alkoxy compound of elements from main group III and/or elements from main group IV and/or of transition metals of group IV such as TiO<sub>2</sub>; the nanoparticles have a mean diameter of from 1 to 1000 nm; the surface coating is applied by means of dipping, flooding and/or spraying. Harada further discloses (paragraphs 12 and 38) that the surface coating includes constituent with an antimicrobial action.

Claims 1,6 and 10-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Masahiro et al. (EP 1154042A1). Masahiro discloses a process of coating and a heat exchanger

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having a hydrophilic surface coating, wherein the hydrophilic surface coating contains nanoparticles disposed in an aqueous dispersion or solution which contains a organic binder; the nanoparticles have a mean diameter of from 1 to 1000 nm; the surface coating includes constituent with an antimicrobial action; the surface coating is applied by means of dipping, flooding or spraying; a pre-treatment of an acid is carried out, with subsequent scale removal and/or a conversion treatment with mixed oxides and/or mixed fluorides and a drying process is carried out after the pretreatment.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada Hiroaki in view of Jonschker Gerhard et al. (WO 99/52964)/ US (6,620,514). Harada Hiroaki substantially discloses all of applicant's claimed invention as discussed above except for the limitation of nanoparticles comprises of hydrated oxides of transition metal of group IV. Jonschker Gerhard et al. discloses (column 3, lines 32-49) a nanostructure layer using oxides or oxide hydrates of transition metal belongs to transition group IV such as TiO<sub>2</sub>, ZrO<sub>2</sub> for a purpose of improving the abrasion and corrosion resistance of the coated substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Jonschker Gerhard's teaching in Harada Hiroaki's device for a purpose of improving the abrasion and corrosion resistance of the coated substrate.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inbe et al. (US 6,659,171) discloses a hydrophilic modification method.

Campbell (US 2002/0117293A1) discloses a heat exchange element with hydrophilic evaporator surface.

Arpac et al. (US 6,620,514) discloses a nanostructured forms and layers.

Adam et al. (US 2002/0045045A1) discloses a surface modified semiconductive and metallic nanoparticles.

Yeh et al. (US 2006/0005951A1) discloses a method for enhancing mobility of working fluid in heat dissipating device.

Sherman (US 2004/0120884A1) discloses a nanoparticulate titanium dioxide coatings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tho v Duong/  
Primary Examiner, Art Unit 3744